

Title (en)
DEVICE FOR ACTIVELY MONITORING FISSILE MATERIALS

Title (de)
VORRICHTUNG ZUR AKTIVEN ÜBERWACHUNG VON SPALTSTOFFEN

Title (fr)
DISPOSITIF POUR LE CONTRÔLE EN TEMPS RÉEL D'ISOTOPES FISSILES

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Application
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Abstract (en)

The invention relates to the field of technology concerned with the development of methods and instruments for detecting radioactive substances. The structure of the proposed invention is comprised of two coaxially arranged cylinders: an inner cylinder made of lead, which acts both as a gamma shield and as a neutron multiplier; and an outer cylinder made of polyethylene, which acts as a neutron thermalizer. Fifteen helium-3 counters with cadmium filters are equidistantly built into the wall of the outer cylinder in a circle, parallel to the generatrix. An isotropic deuterium-tritium 14 MeV neutron generator is mounted in the wall of the outer cylinder, perpendicular to the generatrix. A pedestal capable of vertical axial movement is disposed in the lower part of the inner cylinder. Prior to loading into the apparatus, a vessel and a structural material contained therein are subjected to gamma scanning. Then, by means of the movable pedestal, the vessel is mounted in the inner cylinder such that the center of mass of the structural material is situated opposite detectors. The proposed device provides high-accuracy, high-speed detection of fissile materials.

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